PME RESEARCH LABORATORY, APRIL 1980

PROJECT TITLE : PROTAGORAS

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The aim of the project is the determination of the influences proteins of tobacco have on the smoke composition, on smoke condensate and on cigarette subjectives. Our present problems are the extraction of proteins from tobacco and the prepartion of reconstituted tobacco sheet.

EXTRACTION OF DISINTEGRATED TOBACCO (1, 2)

Burley strips with a protein content of about 20 % have been extracted with water while being disintegrated in a Waring blender. A number of trials were carried out varying the disintegration time and the water temperature. After disintegration, the slurry was centrifuged in order to separate supernatant and sediment. Protein determinations were carried out in both fractions. The results indicated that during this procedure no significant amounts of protein went into solution.

It was thought that increasing the disintegration efficiency might facilitate protein extraction. For this reason a Polytron homogenizer was tried out. However, no proteins could be found in this extract either.

Similar experiments as described for burley strips were carried out with a total RCB blend. The results obtained during the extraction trials were similar, i.e. negative.

The reason why it proved to be impossible to extract any proteins in such an aqueous system might be found in protein denaturation during curing. If this was so, the proteins would sediment with the slurry during centrifugation.

EXTRACTION BY ENZYMES (3)

Burley strips have been extracted with water containing different amounts of trypsin. No results are available yet.

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SHEET EVALUATION (4)

It is most likely that protein removal from tobacco will necessitate a disintegration step. If this is so, the disintegrated tobacco will have to be reconstituted in order to be made up into cigarettes for the avaluation in terms of smoke chemistry, taste, etc.

All the experiments will be at laboratory scale and therefore a sheet process has to be applied which works with small sample size. The obvious candidate is a slurry casting process. We will consider both, slurry casting processes using binder material and such without binder addition.

FUTURE WORK

Emphasis will be placed on enzymatic protein degradation prior to extraction.

REFERENCES

(1) M.F. Mangilli, Notebook 127, 34-38

(2) A. Hänggi, Notebook 790904, 35-38

(3) M.F. Mangilli, Notebook 791205, 36.37

(4) A. Hänggi, Notebook 790904, 39-43

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